



Workload negotiations for early and mid-career researchers in an Athena Swan gold-awarded department

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Abstract

In the UK academia, the Athena Swan (AS) Charter, established in 2005 is considered a significant innovation to improve women's representation in senior positions. While several studies claim a measurable improvement in structural and cultural issues faced by women in AS-accredited universities, studies question the legitimacy of these claims considering persistent gender issues in academia. Using a grounded theory approach, the current study addressed this gap by investigating the impact of AS accreditation on the lived experience of early- and mid-career academics in UK Science, Technology, Engineering, and Mathematics (STEM) subject areas. The findings show the performativity dimension for women who work in these spaces where women are required to undertake additional workload, which disrupts their more rewarding research activities. The added workload for women includes blood work associated with managing emotions, pain, and menstrual bodies in the science lab, as well as mothering responsibilities associated with cleaning and maintaining the lab spaces, and caring and nurturing work associated with pastoral care duties. This study argues that this added workload can have negative implications for women's careers, which is not reflected in AS workload models.

Keywords

Organizational cultures • Athena Swan • Gender inequality • Workload negotiations • Academic Mothering • Work-load models

Introduction

Studies report concerns over women's continuous underrepresentation in senior roles, especially in the UK higher education institutions (Westoby et al., 2021). This is considered to be worse in Science, Technology, Engineering, and Mathematics (STEM) subject areas, where Advance HE (2023) reports male professors occupying 74.7% of the professorial roles. Athena Swan, a voluntary charter was established in 2005 in the UK Higher Education (HE) Sector to support women's career progression in STEM by encouraging participating universities to implement the AS gender equality principles in their organizational structures and cultures. While the initial focus of the charter was on women in science, this was extended in May 2015 to the social sciences, humanities, business, and law disciplines. The participating institutions are encouraged to apply for Bronze, Silver, and Gold awards based on their efforts towards gender equality initiatives (Equality Challenge Unit, 2018). However, several studies raise the legitimacy of the accreditation and its role in improving gender issues in academia over the continuing underrepresentation of academic women in senior positions in the UK STEM subject areas (Fagan & Teasdale, 2021).

This article will present the findings from a research project that addressed the issue of women's segregation in lower academic positions in STEM subject areas. The study used a grounded theory approach, adopting a case study design to explore the lived experiences of women in an Athena Swan gold-awarded department in the UK. It will discuss the theme of unequal division of labour in academia, which can result in negative experiences for women in these spaces.

Defining gender

Gender from a social construct perspective is defined by researchers as an 'accomplishment' (West & Zimmerman, 1987), 'configuration' (Connell, 1995) and display or performance (Goffman, 1976). Challenging the previous theorization of gender, Butler (1993) in her seminal work argued gender as performativity, whereby doing gender is normative in the sense that gender is not just a norm but becomes a regulatory practice. In this sense, gender is constructed through everyday acts; however, these acts are performative iterations and necessitated by regular practices of gender consistency. Unlike previous gender theories, Butler treats performance as a compulsory reiteration of norms.

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In her words, “the ‘performative’ dimensions of construction are precisely the forced reiteration of norms” (Butler, 1993, p. 94). Iterability is thus a normalized and constrained repetition of norms, a necessary condition for performativity, giving performativity an act-like status while hiding its practice of reiteration.

Extending the theory of performativity to an organizational context provides opportunities to understand gender inequalities in organizations. As Butler (2010, p. 147) notices “the economy’ ... only becomes singular and monolithic by virtue of the convergence of certain kinds of processes and practices that produce the ‘effect’ of the knowable and unified economy”. In this sense, Butler acknowledges the importance of context in shaping reality, thus providing management researchers with the opportunity to understand organizations as knowable effects. The knowable effects, which may include gender, work, and organizations, are governed by the performative regulatory frameworks of norms and power. Using the notion of performativity to examine gender inequalities offers the opportunity to understand gender through organizational practices and processes (Harding et al., 2017).

While some studies have examined the impact of gender performativity in an organizational context, they have seldom explained how inequalities are shaped through gendered norms. It is argued that the dominant norms of organizations may result in shaping the behaviours and interactions of the members (Jenkins & Finneman, 2018). From a Butlerian perspective, this further suggests that those who fail to perform these organizational norms may be punished by being denied career opportunities. For instance, evidence from Tyler and Cohen (2010)’s empirical study showed the lived experiences of women in academic spaces becoming gendered and embodied requiring women to manage their bodies in accordance with the culturally accepted gendered norms in these spaces (Young, 1980). They link Lefebvre’s spatial theory to academic spaces and argue that failing to perform these norms can result in women being denied recognition and career opportunities. Similarly, Fotaki (2013)’s empirical study reports that the embodied status of women in academia results in them being simultaneously “idealized” and “shunned” in the academic spaces. Using empirical evidence from nine UK business schools, the study argues that women’s bodies being associated with maternal care requires them to be culturally performative with regard to caring and nurturing responsibilities in academic institutions. At the same time, the symbolic strangeness of the female body and its reproductive functions in the academic institutions are argued to result in women being considered as the “Other” rendering them the outsider status. The study thus reports how women are reduced to a body in academia resulting in their lower status in these institutions. However, while the

embodied status of women might inform the organizational relationships, there are fewer studies which explore the lived experiences of women in these contexts (Sang et al., 2015; Weinfurter & Seidl, 2019). Thus, a Butlerian lens towards gender allows us to understand inequalities in organizations. The theory of performativity is particularly relevant in this research, which explores the impact of AS accreditation on the everyday experiences of women researchers. This study understands gender as performativity enacted and re-enacted through everyday interactions and how they shape the understanding of actors, as proposed by Butler (1990). The theory of performativity also offers further possibilities for understanding gender subversion, resistance to dominant cultural norms, and male domination (Jenkins & Finneman, 2018). In this sense, Athena Swan accreditation can be viewed as an intervention that challenges the dominant cultural norms in organizations that may disadvantage women researchers in science (Tzanakou & Pearce, 2019). While some studies report AS to have positively impacted the structural and cultural gender equality issues in participating institutions (for example, Barnard, 2017; Caffrey et al., 2016; Ovseiko et al., 2017; Tsouroufli, 2019) others question the legitimacy of such self-reported impact and argue that the evidence is not adequate to suggest that the AS departmental initiatives have transformed the real-life experiences of women in those institutions (McKie, 2020). For instance, Barnard (2017)’s analysis of Athena Swan gold award application documents recognizes AS to be an “overriding success” (p. 169) which has resulted in an increased awareness of gender equality issues among early career researchers or ECRs (referring to PhD students and post-doctoral researchers) in the participating organizations. The study also claims that the AS has improved career development opportunities for ECRs through mentoring opportunities, inclusion in committees, social gatherings, and networking opportunities. In a similar tone, Ovseiko’s (2019) findings from their interdisciplinary analysis of the organizational culture across UK medical science and social science disciplines found that the AS accreditation itself has resulted in participating organizations challenging gender bias and discriminatory practices, improving work-life balance, and better recognition of women’s caring responsibilities.

However, O’Connor’s (2019) evaluation of gender equality initiatives using global scholarship challenges the positive impact reported by these studies and criticizes these interventions for mostly focusing on an individual level. They argue that schemes like mentoring support are used as a strategy to fix women rather than addressing gendered organizational practices. Furthermore, they claim that the lack of focus on the distribution of power and resources within HEIs being untackled by the Athena Swan interventions is a factor for continuing inequalities in the universities. Also, Tzanakou

and Pearce (2019) examine the experiences of women working in an Athena Swan Self-Assessment Team (SAT) and report that the AS implementation itself in departments results in an unequal workload for women in SAT committees. They also found this to be worse in STEM where women represent the minority status therefore being pressured to participate in the committee. Furthermore, studies criticize AS as being a box-ticking exercise which has little impact on improving the gender issues for women academics especially in STEM (for example, Ovseiko, 2017). However, studies assessing the impact of the Athena Swan initiatives suffer from limited evidence in showing how these initiatives are transforming the lives of women academics (Schmidt & Cacace, 2017).

This article will address this gap by reporting how the AS practices in a gold awarded department have transformed the lived experiences of academic women in STEM. The theory of performativity offers possibilities for understanding how Athena Swan practices may have subverted gender norms within the existing organizational power structures. Therefore, in alliance with the aims of the current thesis, gender is understood as performativity to elucidate how AS accreditations towards the gendered organizational practices implemented in organizations have impacted the everyday lives of women researchers.

Academic labouring

Several studies have raised the unequal distribution of labour in academia as a barrier to women's career progression and gender inequality in academic organizations (Casad et al., 2021). According to Acker (1990), the gendered division of labour is the actual duties that are culturally expected of employees in relation to cultural gender performativity in organizations. From this perspective, it is argued that organizational jobs are divided according to gender binaries associated with symbolic cultural norms in a wider society. In the context of academia, the literature on the division of labour focuses on two perspectives: first, the division of academic work within the academic institution where there is an unequal division of academic labour expected by men and women. The other strand of literature shows disciplinary job segregation across STEM and non-STEM, where STEM disciplines are associated with masculinity and are therefore considered suitable for men, while women are considered more suitable for soft disciplines such as applied sciences and humanities (Thébaud & Charles, 2018).

In the context of the gendered division of labour within academic institutions, the earlier work of Acker and Dillabough (2007), relying on Bourdieu's (2001) theoretical framework, argues that the symbolic societal norms that divide men's and women's work into the public/private domain are further reflected in the maintenance of institutional work categories (Bourdieu, 2001 cited in

Acker & Dillabough, 2007). These cultural norms within academic institutions are considered to legitimize some labour as more suitable for women and some for men. They use empirical evidence collected in the Canadian HE context to show women's work where they are treated as handmaidens and helpers in the institution. Recent empirical evidence from studies in academia supports this argument of division of labour in the academic context, where it can be found that the service roles expected of women include teaching, supervisory, and administrative services, whereas men are expected to perform research work in relation to the cultural performativity of gender (Guarino & Borden, 2017; Heijstra et.al, 2017; Park & Park-Ozee, 2020). The unequal distribution of the caring and administrative roles in academia was investigated in an Icelandic context by Heijstra et al. (2017) in their qualitative study, where they developed Bird et al.'s (2004) institutional housekeeping in the academic context, showing the unequal distribution of labour disadvantaging academic women. They coined the term "academic housework" to illustrate the little recognized and rewarded service roles within academia, which reflect the embedded cultural manifestations of gender in academic culture. More recently, Park and Park-Ozee (2020, p. 8) analysed this situation in Western universities claiming this amounts to 21st century "new sexism" which becomes costly for the career progression of women in STEM subject areas. Similarly, in the context of UK academia, studies have argued that women academics' requirement to perform caring and nurturing work takes up time; which otherwise, they could utilise for research-related activities (Fagan & Teasdale, 2021 ; Macfarlane & Burg, 2019). Recent studies show that the division of labour is stronger in STEM areas where female representation is low, which results in women often being required to become culturally performative in academic caring roles. For instance, in the comparative analysis of women academics from STEM and non-STEM disciplines in Macfarlane and Burg's (2019) autobiographical account of UK professors across academic disciplines, women from STEM disciplines expressed stronger beliefs in gender performativity within the organization. While women professors in general expressed academic service roles in terms of committee membership, administrative work, and mentoring as their responsibilities, those from STEM showed an added sense of responsibility to commit to these service roles. This was despite evidence showing their awareness of the disparity in the allocation of academic duties that one academic explained as pastoral care and another as having academic housekeeping jobs dumped upon them. The men were described as generally opting out of these duties, despite formal policies and job specifications requiring them to perform these duties. The study highlighted the added burden on women academic professors in STEM, where they were

expected to perform such duties in comparison to non-STEM academic women.

The gendered division of labour becomes problematic in light of studies showing meritocratic practices in academia based on research productivity, funding, and publications undervaluing academic service roles (Herman & Hilliam, 2018; Van Den Brink & Benschop, 2012; White & Burkinshaw, 2019). Burkinshaw et al.'s (2018) empirical study examining gendered regimes in UK HEIs argued that academic excellence based on publication output and competitive funding practices itself is gendered and built around the masculine model of success. Therefore, research productivity constructed around the masculine discourse of excellence itself results in masculine cultural norms of competitiveness and instrumentality becoming embedded in academic institutional cultures. Teelken and Deem (2013) consider these masculine discourses to be stigmatizing for women in the context of their study on women academics from the UK, Netherlands, and Sweden. With the backdrop of Research Excellence Framework (REF) structures which assess the quality of research in the UK HEI, they identified the academic culture in UK universities as being embedded with masculine norms of performance, resulting in hegemonic discourses being legitimized as gender-neutral. They added that this further resulted in the masculine values of assertiveness and individualism associated with research activities being valued in the academic culture.

As Burkinshaw et al. (2018) show, the merit-based academic excellence associated with masculine values of objective and rational ways embedded in academic culture undermines the collegial, collaborative caring responsibilities associated with academic housework, further disadvantaging women academics. It is in this context that studies examining gendered academic labour argue that women spending much time on undervalued academic housework causes them to have less time to spend on much-valued research-related activities. Therefore, the literature shows that the cumulative effect of an academic culture embedded in masculine norms and women's added requirement to be performative through academic housework can result in a double bind for women. Secondly, some researchers argue that the dualistic division of academic disciplines into hard/soft in relation to the job characteristics associated with the masculine knowledge production style results in further disadvantaging of the position of women academics (Thébaud & Charles, 2018). For instance, an extensive literature review on women's underrepresentation in science subject areas by Avolio et al. (2020) showed that some studies attributed the association of science as a masculine field, assumed to be technically inclined, rational, and objective, as having resulted in STEM disciplines being considered male pursuits. Moreover, science and technology have historically

been related to masculinity more than the social sciences; hence, hegemonic masculine behaviours are argued to be normalized in science discipline areas (Bleijenbergh et al., 2012). However, the literature on STEM academic culture shows that there are few studies reflecting women academic researchers' voices, especially in their early career stages. Furthermore, few studies have reported the lived experiences of how women manage their bodies in workplaces, especially during the menstrual cycle, and how this adds to their workload (Sang et al., 2021). Therefore, this study addresses this gap by reporting the embodied status of women in workspaces and how this reflects on their workload. While the notion of intersectionality is understood to be relevant when discussing the lived experiences of women academics, it is not in the scope of this research to examine the concept in depth. The empirical evidence in this study will contribute to the current literature on the division of labour in lab spaces.

Methodology

This article is based on data gathered from a grounded theory study that investigated the lived experiences of early- and mid-career women academics on post-doctoral, senior post-doctoral, fellowship, lecturer and senior lecturer contracts working in UK science subject areas. A single case study design was implemented, and an AS gold-awarded science department (considered the beacon of gender equality) was selected for this purpose. Semi-structured interviews, document analysis, and participant drawings were used as data collection methods. The departmental AS application document was analysed to understand how the documented gender equality practices are applied to women's lived experiences. Institutional ethical approval was obtained before the data collection commenced. Appropriate steps were taken to ensure that there are no ethical issues associated with this research which includes obtaining informed consent of the participants prior to data collection.

In the initial phase of data collection, women academics, from early career academics to senior academics, who could contribute a range of perspectives to the study were selected (Glaser, and Strauss, 2017). Initially, seven women contacted me on research contracts, and their details and departmental positions are given below.

Table 1. Distribution of Interviews

Departmental position	Number
Lecturer	1
Senior postdoctoral researcher	1
Postdoctoral researcher	5

In the initial seven pilot interviews, a loosely structured interview schedule was followed to allow breadth and depth of the data generated (Taylor, 2005). The interview questions were general and broad, focusing on understanding what happens in the daily lives of women (Hesse-Bieber, 2007). During the interviews, some participants offered to draw the structure of their workspace or mini-lab to help me understand their workspace better. Women referred to their workspaces as corridors which are physical spaces with boundaries where two or more groups share office space and equipment. I was also taken around their laboratories, which helped me observe spatial arrangements and interactions in these spaces.

These observations were recorded in field notes, and memos were used to note the verbal and nonverbal cues of the participants. Thus, the field notes and memos, together with the participant drawings of their workspaces, offered me a better insight into the geographical pattern of the department and the differential interactive patterns in each corridor.

In grounded theory, data analysis is a continual process that occurs simultaneously with data gathering (Corbin & Strauss, 1990). NVivo 12 was used to organize the data and further categorize them during the data analysis. The initial findings indicated that there existed subcultural spaces or mini-cultures, which resulted in differential meanings for the organizational experiences of the participants. Therefore, a calculated decision was made to select women academics who could provide better information on the concept of mini-labs. Thus, it was decided that women academics on research contracts who spent time in research labs would be selected for further interviews. Thus, the second phase of the data collection focused on the theoretical sample for the concepts that were generated from phase one of the data collection.

Table 2. Distribution of Interviews

Departmental position	Number
Senior lecturer (Principal Investigator, PI)	1
Lecturer (Principal Investigator, PI)	3
Senior postdoc	4
Postdoc	22
Research fellow	2

Findings and discussion

Following the NVivo12 grounded theory analysis of the interview scripts, codes were collocated to generate the main themes. This study identified the significance of spaces in generating differential experiences among women who occupied them. It showed the existence of subcultures in the corridor that generate differential experiences for women who

work in these spaces. While these findings are significant in understanding the lived experience of women in academia, this article will discuss the theme of gendered divisions of labour resulting in embodied experiences for women in their labs/corridor spaces.

The findings identified that the core values of the organization continued to be gendered, and scientific labour in the labs became performative for women researchers in these spaces. It suggested the nature of organizational culture to be performative, showing the gendered aspects of scientific labour in these spaces reproducing gendered relations. It argues that women who are required to manage their bodies and emotions in workspaces are caused additional labour. This, along with embodied experiences in the workspace, requires them to perform caring and nurturing roles, resulting in an added workload for them which is not reflected in the Athena Swan gold application documents.

Bloodwork and workload

The findings identified 'bloodwork' related to menstruation issues performed by women in the lab spaces. Women post-docs explained having difficulties managing work while dealing with menstrual issues in the lab occupied by male bosses. This is significant, especially considering the nature of postdoc jobs when they are required to spend a long time in lab spaces. As the below interview extract shows, women's menstruation and related health issues are not taken into account especially in relation to the long hours they spend in science labs.

I think that it's very difficult when you're a female with male bosses to bring out the female only issue, because you worry about looking like, really whiny. (P4, Postdoc)

if you have like period pain, when you're trying to work, but I think any kind of, you know, like illness or disability, it's often not very well catered for in terms of doing scientific research. (P15, Postdoc)

The above quotes highlight the performative dimensions in the lab spaces where women are required to manage their menstrual-related bodywork while managing their workload. This relates to the performative dimensions of gender which Butler (1993) argues is an act of politically compulsory performativity produced through "the stylization of the body and hence must be understood as the mundane way in which bodily gestures, movements and styles of various kinds constitute an illusion of an abiding gendered self" (1993, p. 140). Butler further argues that failing to adhere to gendered norms can result in *punishment* and extending performative theory to an organizational context, this may suggest that those who fail to perform these organizational norms may be punished by being denied career opportunities.

The above findings show women's belief in having to style and manage their bodywork while maintaining emotions and controlling their bodily fluids in academic spaces designed to suit the requirements of men. This agrees with recent qualitative research on women working in academic organizations by Sang et al., (2021), who refer to this as "blood work" resulting in additional labour and related workloads for women. Blood work was conceptualized in relation to women's attempts to avoid feelings of shame and stigma in the workplace. Similar to the women in Sang et al. (2021), women in the current study experienced fear, embarrassment, disgust, and shame due to internalized taboos, resulting in them concealing their menstrual pain in the workplace (Figure 1, Appendix).

In a recent review, Grandey et.al. (2020) argued that women continue to perform despite being in menstrual pain for fear of being viewed as not fitting into the ideal worker norms. They further argued that the shame associated with these taboo topics can result in women facing additional hardships in the workplace. This is consistent with the findings of the current study, in which women's negative experience in relation to managing menstrual bodies and emotions in lab spaces was compounded by the gendered hierarchical structure of these workspaces, where men mostly occupy the Principal Investigator (PI) positions. This results in women, especially those in postdoc positions, finding it hard to communicate these issues to their male bosses resulting in them suffering in silence. The quotes below show how women hide their pain and emotions in lab spaces to avoid bothering their male PIs.

So I get like quite bad period. Yeah and it looks ... once just starting and it's really painful and hmm ... he's [PI] good but I realised that I was hiding my pain. (P8, Postdoc)

Sometimes it (periods) happens while I'm in the middle of the experiment or something. I feel shy to, to take any help from one man or he will say what's wrong with her, she was very fine, just before one hour you know. he will not understand. (P11, Postdoc)

The interview quotes above were consistent with the assumption that the male head of the family could not understand and should not be disturbed by work or non-work-related emotional issues. Furthermore, the postdoctoral researchers in the current study explained the disruptive nature of bloodwork, where pain and bodywork associated with menstruation can have negative implications when trying to manage scientific work. Despite studies claiming that academics have the flexibility to work from home (for example, Adisa et al., 2022; Sang et al., 2021), this can be problematic for women postdocs because of the nature of

their jobs requiring them to be in the lab for long hours. For example, P25, a postdoc explains how she might need to be at the lab for 9 to 10 hours depending on the experiment.

but we don't really use seven hours, 20 minutes (laughs) we work 9/10 hours. So, you know, whatever the experiments take. (P25, Postdoc)

The current study agrees with Sang et al. (2021)'s findings which relate academic workload to aspects of *blood work* in the workplace. It further argues that managing bloodwork adds to the workload for women in science subject areas who continue to suffer in silence. The data further fit Acker (1990)'s description of women not fitting the ideal worker norm whereby "Women's bodies – female sexuality, their ability to procreate and their pregnancy, breastfeeding, and childcare, menstruation, and mythic 'emotionality' – are suspect, stigmatized, and used as grounds for control and exclusion" (p. 152) in the workspaces. This was noticed in the current study where the participants feared expressing emotions and showed their feelings of being abjected in academia by being viewed as 'too emotional' or *whiny* resulting in corridor cultures which were found to be performative for women (Fotaki, 2013, p. 1263). Therefore, similar to the 'one of the guys' strategy described by Kanter (1987), women in these corridors were required to be performative by being the rational man and hiding emotions to suit the male scientist role. They complied with the ideal scientist role, acting as rational and distant scientists while neutralizing any emotions that could associate them with femininities (Wasserman & Frankel, 2015). Thus, women identified the performativity of their abject female bodies, where they were required to discipline their emotions and leaky bodies.

Scientific mothering

The findings of the current study further show the embodied status of women, resulting in spaces becoming gender performative for them. The female embodiment in the lab spaces was evident where women's bodies became highly visible when it came to performing lab cleaning and maintenance work. Women also explained feeling highly visible when it came to caring and nurturing duties. For instance, P30 is a senior postdoc in corridor one refers to her performing '*mothering*' in the research lab, resulting in her doing additional unpaid and unrewarded chores.

uff ... I don't know, sometimes I go in, and I feel like their mother [referring to the corridor members]; it's just, just crazy, I go in and empty all the bins and I'll wipe the surfaces down and I'll clean the sink area, and I'll put all the washing away. And I will really feel like their mother. And umm ... I don't go to lab so much. So maybe you learn to live with it [laughs]. (P30, senior postdoc)

Some participants explained that their embodied status resulted in them having to perform more caring and nurturing work compared to their male colleagues.

When we have undergraduates during the final year project ... quite often they're like, designated to me to like, look after them ... I have definitely noticed that (increased workload) because a guy in my office who's like a similar level. And like, he does not get bothered half as much as I do (pastoral care). And I don't know, whether it's because like, kind of, like, female or like, like, typically seen as more like, teaching and like nurturing ... it definitely adds to my work. (P23, Postdoc)

P15 explains how pastoral responsibilities add to their existing job responsibilities

Yeah ... I suppose it does ... I mean ... I wouldn't say it's too much of a work, but compared to the other stuff that are sort of like ... specifically part of my job ... it's an ongoing process trying to balance (workload) that and figure out actually hmm ... you know ... how do I make this work ... how do I ... you know ... how do I not just drop things on the floor. (P15, Postdoc)

The workload has been crazy it's a true challenging to fit everything in. (P2, Postdoc)

The meaning of mothering was constructed in relation to cleaning after others in the corridor relating to the traditional gender roles of women performing domestic labour. Such nurturing practices in the corridor were interpreted as having responsibilities of taking care of the mess left by others in the corridor. However, such gender roles in the corridor can be time-consuming and take away from actual rewarding research work, which can hinder career advancement. Furthermore, women also explained how gender is enacted in their corridors, where women become invisible when it comes to tasks associated with masculine traits.

when people come to lab, I need strong men to carry something. I could also help you or get something from the top shelf. (P7, postdoc)

whenever something heavy needs moving in the lab, people always look to the boys to do it. (P4, postdoc)

Participants mentioned that corridor behaviour sometimes frustrates them when they hear men being asked to do the 'heavy, tough' jobs like lifting the fridge. Having studied in an all-girls school, P4 feels such behaviour where people ask for 'strong men to carry something' to be stupid. She

considers this to be an example of things that lab members say without thinking and results in a gendered division of labour. Such behavioural patterns point to the gendered dichotomies where men are viewed as tough and strong, while women are considered weak, resulting in women being negatively stereotyped as weak and being overlooked in certain tasks, revealing that these spaces become gender performative.

The female embodiment in the lab spaces was thus evident where women's bodies became highly visible when it came to performing lab cleaning and maintenance work, as well as roles associated with caring and nurturing work. Similarly, they became invisible when it came to performing jobs that required skills associated with masculine strength and toughness for which men were preferred (Connell & Messerschmidt, 2005). These findings align with those of recent studies (for example, Sümer & Eslen-Ziya, 2023) which argue that women carry an unequal proportion of work in academic organizations. However, the current study further extends academic work to academic chores and housework in science labs, including maintaining and cleaning labs that fall on women, which can be an added burden for women. Such gendered division of labour in lab spaces challenges women in negotiating their workload in these contexts. While concerns were raised over early- and mid-career researchers having to negotiate their work in relation to gender, this can be especially stressful for women with caring responsibilities. For example, P25, with childcare responsibilities, shares her experiences as follows:

yeah. I think people in academia, usually very stressed about the workload, because ... we are supposed to work, um ... I don't know, according to your contract, you're supposed to work 37 hours a week, which is about 7 umm ... 7 hours and 20 minutes a day, but we don't really use seven hours, 20 minutes [laughs] ... we work 9/10 hours. So you know, whatever the experiments take, So, whatever, you know. I used to work really long hours, but I guess umm ... I would, that didn't really reflect ... when you when you get home, you want to take a nap because you're tired and because I have a child at home. (P25, Postdoc)

Previous studies have recognized the mother's role to be stereotypically in line with the feminine role of caring, where academic women are required to show interest in others in the organization (Heijstra et al., 2017). Similarly, Fotaki (2013) argues that embodiment results in idealized maternal care in academia, where women's academic work sometimes becomes gender performative. While women's mothering role in scientific workspaces relates to the literature on academic housework on the undervalued academic chores

expected of women, including teaching, supervising, and administrative work, women scientists in the current study were required to perform cleaning and maintenance work in their workspaces, which I term as 'scientific mothering'. Additionally, women in the current context explained how the role of having to clean after others, empty the bins and keep the lab space maintained, was expected of them. This further symbolizes unpaid domestic labour at home, where women perform certain tasks that are invisible and underappreciated.

The findings thus reflect the gendered tasks women are required to perform in academia, which the literature suggests can have serious implications for women academics. Recent research by Macfarlane and Burg (2019) on women professors across nine universities addresses these academic house chores as a trap for women academics and considers them a barrier to women's advancement in UK academia. Their study suggests that women have a greater belief in the additional responsibility to perform teaching, mentoring, and pastoral duties. While the postdoctoral researchers from the current study did not show any such beliefs and recognized it as an unfair workload, it was explained as essential for the smooth functioning of the workspaces.

The gendered labour in the current research therefore provides an additional dimension with regard to caring for the workspaces themselves. Similar to previous studies that address the unpaid, unrecognized, poorly regarded, and time-consuming nature of academic housework, which includes caring and nurturing work (Herman and Hilliam, 2018; Sümer & Eslen-Ziya, 2023), this study identified scientific mothering of cleaning after others and maintaining the lab to be time-consuming service work in these spaces. This adds to the 'bloodwork' that women perform in the lab by hiding, concealing, and managing the pain and emotions associated with their maternal bodies. The current research thus argues that the time-consuming service work and managing bodywork during menstruation together can be added labour for women. This may take women away from actual rewarding research work, which may hinder their career advancement opportunities (Macfarlane & Burg, 2019; Misra et al., 2017).

AS workload allocation model

The AS gold action plans of the department claim to improve the gendered labour in the department using a workload model towards fair workload allocation for academics. Recently, Tsouroufli's (2019) examination of the AS award concluded that the AS gold institutions result in significant improvements for the careers of ECRs by carefully "monitoring and reviewing workloads aiming to achieve gender equity" (p. 40). Similarly, the department recognizing the unequal division of labour as hindering career development for women introduced the

workload model with the aim of embedding equality practices to ensure the fair allocation of work for women academics. It is designed to ensure fairness and transparency in how work is being allocated and focuses on the teaching, marking, supervision, and committee representations that are generally identified in the literature on the gendered division of labour in academia.

However, the workload model that did not address the 'blood work' associated with women's menstruating bodies, especially when working in lab spaces, had no implications for postdoctoral researchers in this study. Therefore, it is not surprising that postdocs generally believed that their requirements were not understood or addressed by the AS departmental initiatives. This suggests that the Athena Swan departmental initiatives have not been effective in recognizing and challenging the nature of the gendered division of labour within the lab spaces, causing women's inability to negotiate their workloads. The findings thus contradicted studies such as those of Tsouroufli (2019), which claimed that workload allocations in AS-accredited departments resulted in fair workload allocation for women. Instead, the current research found that the reported workload allocation model did not recognize the gendered division of work related to scientific work in the labs, causing women to believe that AS departmental initiatives are a tick-box exercise rather than making any real impact. Similar to Sümer and Elser-Ziya (2023)'s argument, the current study recommends that workload allocation models should acknowledge and reflect the workload associated with women's caring and nurturing work, along with the bloodwork in science labs associated with menstruation.

Conclusions

The findings of this study show that the AS action plans of the department have not translated into the everyday lives of early- and mid-career researchers. This finding contradicts previous studies that report the positive impact of AS accreditation in improving gender equality in departments. This research extends gender performative theory (Butler, 2011) to organizational spaces, arguing that the core values in academia remain gendered where scientific labour becomes performative for women researchers in these spaces. It illustrates the gendered aspects of scientific labour in lab spaces, reproducing gendered relations.

The theme of gender performative spaces was related to the workspaces that became embodied for women, where their bodies became highly visible in the lab spaces when it came to performing lab cleaning and maintenance work. However, they become invisible when it comes to jobs associated with masculine strength and toughness, including moving

lab equipment for which men are preferred. The findings extended the notion of academic housework (Heijstra et al., 2017) to science lab spaces where women's embodied status challenges them in negotiating their workload. While academic housework is understood in terms of teaching, administrative, and pastoral care, women scientists in the current study were required to perform cleaning and maintenance work in their workspaces, which is termed as 'scientific mothering' in this study. These lab spaces became performative for women, where they were expected to clean after others, emptying bins, and keeping the lab space maintained. This further symbolizes unpaid domestic labour at home, which is often invisible and underappreciated. It also adds to the literature on bloodwork, which makes it performative for women to adhere to the ideal worker norm.

In conclusion, the findings of this research reject the previous claims of AS success portrayed through workload allocation models (Tsouroufli, 2019) and argue that gender becomes performativity in the lab spaces for women, where women's embodied status requires them to perform bloodwork related to menstruation and mothering roles, which relate to the unrecognized, unpaid, poorly regarded, and time-consuming nature of academic housework (Herman and Hilliam, 2018). These findings further imply that the scientific mothering of cleaning after others and maintaining the lab, which is time-consuming may take women away from actual rewarding research work, which might hinder their career advancement opportunities (Macfarlane & Burg, 2019; Misra et al., 2017). This answers the questions raised by studies on why succession to senior roles can be harder for women, especially in STEM subject areas.

This article has relevance for HRD practice. It adds empirical evidence to the gendered division of labour reproduced in organizational spaces which has yet to be considered when making Athena Swan action plans to improve the working pattern of women researchers in science. The findings in this article also inform the Athena Swan and participating universities on the relevance of implementing meaningful equality and diversity policies/practices which take into account the real-life experiences of women in those institutions. It also identifies the requirement for institutions and HR to review the current workload allocation models so that they consider the additional labour in relation to 'bodywork' which women undertake in their workspaces. To conclude, the empirical evidence derived in this research comes from a single case study department; therefore, future studies may conduct a comparative analysis across different departments. In addition, the gendered dimension of academic labour using the bloodwork and scientific mothering concept could be further explored in other academic contexts.

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Appendix

Blood work in labs	Some Examples
Managing workload	Difficulty managing pain and excessive bleeding while working in lab, the nature of the job causes inflexibility when managing menstrual body issues.
Managing the leaky, messy, painful body	Managing by hiding menstrual bodies, working on experiments through pain, working through heavy bleeding, trying not to bleed on things.
Managing stigma and shame	Concealing menstruation, avoid mentioning the issue of menstruation to the PI, feelings of embarrassment, shy to get help from male colleagues, embarrassed to communicate the pain to the PI, suffering in silence.
Managing lack of facilities	Lab spaces are not designed for women, lack of menstrual hygiene products available, spaces dominated by men who may detect menstruation (spotting the menstrual products hidden in desks).

Figure 1. Observed Aspects of Bloodwork (adapted from Sang et.al., 2021)

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